

The Impact of Legal Challenges on the Evolution of Web-based Intelligent Agents

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Abstract. Shopbots and Metabots are two Web-based intelligent agents that emerged since 1994 with the popularity of the Web. Both agent categories experienced impacts from lawsuits due to their innovative ways of information collection. Though the nature of their information collection methods was the same – which is extracting data from other websites – shopbots generally received favourable rulings while metabots received the opposite. As a result, shopbots become a dominant B2C ecommerce category nowadays while metabots-enabled ecommerce only exists in certain niche markets. This paper intends to explore the validity of the legal measures related and demonstrates that the legal force has a major impact on the development of Web technologies and the business models they later supported.

Keywords: Intelligent Agent, Internet, Data Extraction, Shopbots, Metabots, Database right, Trespassing in cyberspace

1. Introduction

The Web provides an ideal opportunity for more efficient information-brokerage models (Maes, 1994). As a result, we have seen numerous Web-based agents emerge since 1994.

For example, A Web-based auction agent like eBay could reach a potentially unlimited number of participants compared to its brick-and-mortar counterpart. A Web-based travelling agent like expedia.com could seamlessly integrate airfare, hotel, and car-rental service. It can then cross-sell travelling products when travellers plan their trip online. Former premium ticketing agent, TicketMaster, also has its online presence, ticketmaster.com, which essentially has transformed itself into a Web-based ticketing agent.

The Web also provides powerful technology to allow shoppers, from one site, to compare price information for the same or similar products and services from multiple sites. We call such technology comparison-shopping agents or shopbots because they serve as the buyer's agent to retrieve price information from other websites (Wan, Menon, & Ramaprasad, 2003). These shopbots dis-intermediated the traditional role of agents because they were competing for the same customer. However, shopbots are able to re-package the information they have collected in a more efficient way.

There is a natural limit on the number of websites a shopbot can handle, so one shopbot will not be able to cover all sites a user wants to search. As a result, shopbots emerged and were distributed unevenly, with both overlapping coverage and their own unique coverage. Thus, another type of shopbots or so-called MetaBots emerged. Instead of searching websites directly, MetaBots search those shopbots and retrieve and aggregate the information from the latter (Etzioni, 1997).

As we will illustrate in this paper, the legal challenges for these three types of emerging Web-based technology and business models are Web-unique and, in some circumstances, rather complex. The possible consequence of lawsuits against them greatly influenced the evolution path of these three categories, especially for the two Web-only categories, Shopbots and MetaBots.

Essentially, shopbots end up with a more favourable legal environment than MetaBots in terms of their information retrieval behaviour. Consequently, the former developed into a fully mature business model while the latter largely stalled in its development.

2. The Case of Shopbots and Comparison-Shopping Services

Since the first launch of BargainFinder in 1995, comparison-shopping as an effective online shopping mode has attracted millions of consumers as well as large number of small vendors. It has also inspired the creativity of at least two generations of techno-entrepreneurs to develop ingénue shopbots that could retrieve more and more complex product information (Wan, 2005).

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However, this category of B2C ecommerce has also experienced the most complicated legal challenges. As a result, the evolution of this information industry category was probably more influenced by lawsuits rather than by technology advances.

In order to be familiar with the details of the legal challenges in comparison-shopping services, we need to introduce some typical scenarios of online shopping, as well as the roles of comparison-shopping services.

Assuming an online shopper visits an online store like bestbuy.com to look for the price of a digital camera and then clicks through to another online store like Amazon.com for the price of the same camera. Both are certainly legitimate actions. Now if we go a step further and suppose that this online shopper employs a shopping assistant, who is representing the shopper, visits these two stores and retrieves the price for the online shopper. *Is this legitimate?*

This is exactly what the comparison-shopping agent, BargainFinder, did in 1995 and such a query was blocked by some online music vendors (Krulwich, 1996). Thus, the first legal challenge involved the rights of online vendors to block the query of comparison-shopping agents.

Now we go a step further, is it legitimate for a comparison-shopping agent to visit these two online stores, and cache the price of the same digital camera, and then allow all incoming online shoppers to retrieve the price without going back to these two stores repeatedly?

This is the general practice of most comparison-shopping agents (Choi, 2001; Jeanette, 2004; Rebecca, 1999). By caching the price information from online vendors, they improve their own efficiency as well as that of online vendors. However, if data is retained on agents' databases, the legal risk of agents increases unless the online vendors could benefit from such actions. So far, the potential legal risks of comparison-shopping services have just been between online vendors and agents. Yet, the true challenge for comparison-shopping services may lie in the data extraction among agents themselves.

Again, suppose there is a comparison-shopping agent that does not collect price information from online vendors. Instead, it collects such information from a few other comparison-shopping agents (such agents are usually called "Meta-Search" agents or Metabots). Do the latter Shopbots have the right to prohibit the Metabots from querying its own search engine? Should the Metabots compensate the Shopbots or the vendor?

Many comparison-shopping services provide rating information on products, vendors and consumers/buyers (on auction sites). Will such information be transferable with the producer or must it be retained by the site where the information was originally obtained?

With these preliminary questions, we review the development of comparison-shopping services and examine how legal challenges influenced their development track and techno-business model in the next section. We will illustrate the development of shopbots by dividing the history of its evolution from 1995 to 2005 into three stages. Major conflicts of stakeholders, along with the resulting legal challenges and their influence, are discussed within these stages.

3. The Nascent Stage (1995~96): The Dilemma of Vendors

The early stage of comparison-shopping services mainly revolved around the online vendors and shopbots. The central legal challenge is whether shopbots have the right to collect information from vendor sites; Or should an agent be allowed to deep-link to another website without permission?

Back in 1995, when BargainFinder was first launched, there were two different vendor attitudes: cooperation and blockade. Typically, small online vendors preferred to be searched by shopbots, while more popular online vendors were hesitant (Krulwich, 1996).

For small online vendors, the major business hurdle was visibility (Wan, 2005). They could usually offer competitive pricing, but their websites could only reach a limited number of consumers due to budget constraints on advertising. The comparison-shopping service works like an indirect promotion and leveled ground of competition with more established competitors, which usually asked higher prices for the same product. Thus, they generally preferred the crawling of shopbots.

Since established popular online vendors usually charged premium price, they were afraid of losing their business when the index of comparison is based on price. Also, many popular online vendors generated their revenue from banner ads from their website; the link used by shopbots brought the shopper to the product page directly, thus potentially reduced their ad revenue though it could have been that this additional revenue might not have happened without the referral of shopbots.

However, there were also potential gains from being listed in a comparison-shopping service for vendors in both categories because it turned out that online shoppers were not mere bargain finders, but were also concerned about service qualities, such as delivery and return policy, as revealed by later studies (Brynjolfsson & Smith, 2000). Thus, popular vendors probably also benefited from being listed in a shopbot. This was confirmed later with the popularity of comparison-shopping services.

Driven by this new ecommerce opportunity, techno-entrepreneurs quickly scaled up the coverage of comparison-shopping service to a wider range of product categories.

Among the earliest comparison-shopping services in online retailing were killerapp.com and pricewatch.com (Peter, 1998). They were launched in 1995 and both started in the computer and electronics category. Meanwhile, due to their innate agent-mediated nature, personal finance and insurance were the other two product and service categories that attracted many comparison-shopping services. Some of them were former agents in their respective fields that essentially automated their services.

Because of the relatively nascent stage and limited coverage of products and services by comparison-shopping in the first two years when this new internet technology was in operation, there were few lawsuits.

There was no legal lawsuit directly addressing comparison-shopping service in the US, but a lawsuit launched in the late 1996 in Shetland, Scotland, set a precedent on the deep linking problem shared by comparison-shopping services.

In this lawsuit, a former employee of a local newspaper on Shetland launched a news website and linked some news on the local newspaper's website to his new website. The Scotland court issued an interim interdict banning the links. Before the case was ruled by the court, the two publishers settled the case.

Though there was no formal ruling for this lawsuit, the intention of the court from its interim interdict was to limit the extent of deep link. From a long-term perspective, such an interim interdict discouraged innovative Web uses. That is probably the reason why the rulings were opposite for similar cases in the United States.

On the other side, limiting deep link might also be a thought held by Tim Berners-Lee, the Web inventor. For example, he indicated in his memoir (Berners-Lee, 2000) that

“the fundamental principle behind the Web was that once someone somewhere made available a document, database, graphic, sound, video, or screen at some stage in an interactive dialogue, it should be accessible (subject to authorization, of course) by anyone, with any type of computer, in any country.” (Italics was added for emphasis).

4. The Rapid Growth (1997~02)

The rapid growth in the comparison-shopping service category started in 1997. Within one year, several major comparison-shopping start-ups launched and grew into major ecommerce portals including the leading shopbot, MySimon.com.

Though a few years before shopbot's probing of online vendors was frowned on by vendors, both small and established online vendors soon realized that shopbots were not their foes but their free advertising channels (Wan, 2005).

Many small online vendors began proactively asked to be listed on major shopbots. Listing has become popular since 1997 and gradually, those major shopbots in the retail industry have begun to charge a listing fee for the services. This in turn begat another industry- the data feeding services that specialize in adding online vendors' products and prices to all kinds of comparison-shopping services.

There were complaints, but no high profile legal cases in the online retailing sector between vendors and shopbots during this period (Plitch, 2002). However, among agents, including both shopbots and Metabots, there were four notable lawsuits worth our attention.

These legal disputes mainly evolved around two questions:

- Should a shopbot be allowed to collect information from an agent site without the consent of the owner?
- Should a metabot be allowed to collect information from a shopbot without the consent of the shopbot owner?

The first lawsuit was mainly launched by traditional agents like Ticketmaster. Such agents depend on both Web advertising revenue and online brokerage to maintain their online presence. When shopbots retrieved the information from their website and then brought the consumer to the product page directly, the so-called “deep link,” these agents felt threatened about their traditional agent role's being eroded or even replaced.

The second types of disputes were more complex. Since it is easier to retrieve the price information from a single shopbot than from multiple online stores, a new type of shopbots called meta-shopbots or metabots has emerged since 1997. These metabots searched a few well-known shopbots and aggregated information from these shopbots for consumers. Because of the technology advancement, sometimes shopbots found themselves virtually impossible to block probing by meta-shopbots, thus, legal regulation has become critical in this aspect.

However, if legal measures were pursued, would the shopbot claim that the price and other product information it collected from online vendors was its own intellectual property? Then how does it justify its own information collection action on online vendors?

There were no existing laws and regulations to directly address such behaviour at that time. As a result, when such lawsuits surfaced, the United States and Europe used different laws to interpret the situation. In the United States, the trespass of chattels clause was used; while in Europe, the *sui generis* provisions of the database directive were used.

Next, we briefly illustrate these lawsuits (Table 1) in these two categories and analyze how the court rulings affect the subsequent development in comparison-shopping services.

Table 1: Four major lawsuits between 1997~2002

Lawsuits	Nature	Filed	Settled
Mysimon vs. Priceman	Shopbot vs. MetaBot	1999	2000
Ticketmaster vs. Tickets.com	Broker vs. shopbot	1999	2000
eBay vs. Bidder's Edge	Broker vs. MetaBot	1999	2000

4.1. Ticketmaster v. Ticket.com

The lawsuit launched by Ticketmaster in 1999 received a great deal of media exposure, and it directly addressed the first category- the vendor and shopbots problem.

Ticketmaster is a world-leading ticketing company. It provides ticket sales, ticket resale services, marketing and distribution of event tickets and information. It is also one of the earliest traditional agent businesses to utilize the Web power to expand its market reach.

Tickets.com is an online provider of entertainment, sports and travel tickets. It could be considered as a niche shopbot specializing on aggregating ticket information. It provided hypertext links to Ticketmaster web pages for tickets not available at Tickets.com. Ticketmaster sued tickets.com for copyright infringement as well as transferring customers to a Web page deep within their site, and this caused the customer to bypass the Ticketmaster home page, which has advertisements.

The court ruling came on March 27, 2000, was in favour of Tickets.com. The court judgment gave comparison-shopping services the confidence to continue their existing business model. But on cases dealing with the shopbots vs. metabots, the metabot was consistently in a disadvantageous position. The two most publicized lawsuits were Mysimon.com vs. Priceman.com and eBay vs. Bidder's Edge.

4.2. MySimon.com vs. Priceman.com

Mysimon.com was one of the early comparison-shopping services. It became popular in 1997 and became the top player in this category. Priceman.com was a small metabot launched in 1998 by Neal Verman, a young computer consultant from Houston.

On September 8, 1999, Josh Goldman, CEO of MySimon.com, noticed a much-publicized creative auction on eBay that was selling a 47.39% stake in a start-up called priceman.com for \$10 million. It turned out Priceman.com was a metabot that searched prices information from multiple comparison-shopping sites, including MySimon.com, then the largest one. According to Goldman, he found that Priceman.com used various background essays on comparison-shopping that were written by MySimon employees and made few or no changes to the originals. Thus, MySimon decided to file a lawsuit to Priceman for its violation of copyright (Lazarus, 1999).

The legal claim by MySimon is cyber-trespass, which originated as an attempt to keep people from sending unsolicited junk email to other computer systems. However, this claim was problematic in the case of Priceman because MySimon allowed its site to be accessed by the general public, which included Priceman (Kaplan, 1999).

Priceman ceased operation when MySimon launched the lawsuit and eventually closed its operation in 2000.

4.3. eBay vs. Bidder's Edge

eBay vs. Bidder's Edge was the most publicized lawsuit related to comparison-shopping services. It is a lawsuit between shopbots and meta-shopbots. There are several important implications from this lawsuit, as we illustrate in this paper.

In late 1999, with the popularity of online auction, various auction services sites came out. AuctionWatch.com and Bidder's Edge were two leading auction service providers at that time. When competition was heating up, many auction service providers found that it was necessary to have new features to attract users. One of the new features provided comparison-shopping tools to allow users to search an auction item across multiple auction sites, including eBay. These auction services sites essentially transformed themselves into meta-shopbots or metabots because eBay, as the broker between sellers and buyers, played the shopbot role.

This new feature irritated eBay, which had a 70% share of online auction market, because it feared that allowing a consumer to compare auction items on eBay side-by-side with others so easily would make other smaller auction sites popular and erode the market share of eBay. This would also make the auction services sites more popular and could potentially displace the leading position of eBay in online auction.

Thus, in September, eBay issued a formal request to those auction service sites and asked them to stop searching eBay sites. Bidder's Edge became the first auction service site to comply with this request in late August when received the telephone request from eBay with a loss of 50 percent of the available auctions. However, Bidder's Edge realized that compliance could be a strategic mistake because AuctionWatch.com, its leading competitor in auction service, actually launched its own comparison-shopping tool in mid-September and allowed users to search eBay and other auction sites, even under the pressure of legal threats from eBay. So on November 2, Bidder's Edge formally announced that it would resume the searching of the eBay site.

On November 4, eBay took the first action to block the IP request from AuctionWatch.com and filed a lawsuit to prevent Bidder's Edge from searching and displaying eBay's auction listings on the Bidder's Edge Website.

In May 24, 2000, district court Judge Ronald Whyte granted an injunction (went into effect in June 8) in eBay's case against Bidder's Edge ("Ebay, Inc vs. Bidder's Edge Inc, Order Granting Preliminary Injunction," 2000). February 15, 2001, Bidder's Edge closed its site due to financial difficulty. On July 24, AuctionWatch.com agreed to stop searching eBay's listings, and, in return, eBay named AuctionWatch.com as one of its preferred service providers.

The *eBay vs. Bidder's Edge* case showed two different choices for metabots. Because of Bidder's Edge's position in providing comparison-shopping for multiple shopbots including eBay, it meant eventually was crushed by the lawsuit, even though there was much public support behind it. For AuctionWatch, it meant survival and giving up its metabot position. These two cases largely deterred many later metabot attempts.

5. The Maturity: 2003 and forward

After five rapid growth years and a few legal clarifications, the business model and technology infrastructure of comparison shopping service matured. This is especially reflected in the online retailing category. The number of leading shopbots in this category grew exponentially because of the active participation of online vendors. Also, without any legal risk, these shopbots became the target of big ticket acquisitions. Thus, we have witnessed the merger and acquisition wave since 2003, and it reached its climax in 2005 when the top 3 comparison-shopping services were subsequently acquired by established business in ecommerce and the advertising industry. On the other side, the development of metabots in online retailing was stalled. There are almost no major attempts to aggregate results from existing shopbots though it could further benefit the consumers. The ruling of eBay vs. Bidder's edge as well as MySimon.com vs. Priceman.com deterred most innovators in this field, though in some service categories like online travelling, metabots like Kayak.com and Sidestep.com did draw some public attention since 2000, but their influence on the overall electronic commerce market is rather limited.

As a result, with the legal impacts at the formation stage of the Web-based comparison-shopping industry, we observed a more concentrated format (as it currently is) with shopbots dominating the market while metabots scarcely exist

6. Legal issues of database creators and data re-users

The conflicts between shopbots and metabots can be regarded as conflicts between database creators and data re-users. The existence of the web and various web aggregation technologies has enabled people to easily create new databases by systematically extracting and combining the content of other databases. For example, Bidder's Edge created a large online database by gathering bidding data from more than 100 online auction sites, including the largest online auction site, eBay. Similarly, Priceman provided an improved comparison shopping database by aggregating data from over a dozen comparison databases including mySimon. While such activities create added value for the public and are generally welcomed by consumers, they may adversely affect the interests of source database creators. This conflict has given rise to heated legal debate about providing legal protection for database creators and regulating database reuse activities. For instance, the unique issue of trespassing in cyberspace has been brought up in the lawsuits mentioned above to restrict the activities of database re-users. However, it should be noted that these case decisions need attention because they are not based on any particular regulations. And they should by no means be regarded as representing a standard solution to such conflicts. Various legal initiatives and policies are at hand to address the problem; in the following section, we will try to evaluate their validity.

6.1 Trespassing in Cyberspace

In the United States, where database regulation is lacking, the courts have adopted the theory of “cyberspace trespassing” to protect the rights of database creators. In the above case *eBay v. Bidder’s Edge* 100 F. Supp. 2d 1058 (N.D. Cal. 2000), eBay successfully asserted a trespass claim against Bidder’s Edge. The court adopted the old “trespass to chattels” theory to protect the information on the plaintiff’s website, even though such information was not patented, copyrighted, or confidential. The court held that the crawling of eBay’s Web site by Bidder’s Edge was unauthorized because “eBay’s servers are private property, conditional access to which eBay grants the public.” Id. at 1070. However in the similar case of *Ticketmaster Corp. v. Tickets.com, Inc.*, 2003 U.S. Dist. LEXIS 6483 (C.D. Cal. 2003), the court rejected the plaintiff’s trespass claim, stating that:

“Taking of factual information from a public source was not a trespass, and if taking the information from a publically available computer was a state law trespass, it fell afoul of the presumption aspects of the Copyright Act.” Id.

The court argued that in this case there was “no question of invasion of the computer by spiders, and possible consequent damage to the computer was presented to this court.” In contrast, damage was found in the eBay case by the court.

Despite this argument, the fact is that the court held different opinions on similar cases, and the court’s decision in eBay has been regarded as quite problematic by many legal experts. The most controversial part of the decision is that the court in the eBay case attempted to substitute possible future harm for the actual harm required by the law of trespass to chattels (Lemley, 2000). Using the trespass theory to protect the database creator is actually quite controversial because, unlike applying the theory to spyware, it is difficult to prove actual harm caused by the conduct.

Similar oppositions also appear in applying trespass theory to other areas of the Internet, such as spam. In the case of *Intel Corp. v. Hamidi*, 43 P.3d 587 (2002), for example, a former employee sent six waves of thousands of emails to Intel employees over a two-year period complaining about Intel’s personnel practices. The California Supreme Court ruled in favour of the former employee and against Intel, because Intel had suffered no proven damage to its computers or their usefulness.

Besides trespass to chattels, the legal arguments commonly used in plaintiff’s claims include copyright infringement, misappropriation, violation of the federal Computer Fraud and Abuse Act, false advertisements and breach of contract.¹ Since there have been no definite conclusions in these cases, the legality of reuse activities remains controversial. The difficulty in applying laws that predate the Web has urged law makers to resolve the issue by creating new laws to protect the databases.

6.2 Database protection

The impetus for protecting databases started in the landmark case *Feist v. Rural* (499US340, 1991). Feist Publications copied about 8,000 records of Rural’s white pages in compiling its phone book. The Supreme Court decided that Feist did not infringe Rural’s copyright in the white pages, as phone numbers are facts that lack originality. A similar argument also makes sense for the “products price” in the above-mentioned cases in that database creators only select and compile factual information that they obtain from other sources. Thus, copyright law could hardly apply under such circumstances.

To tackle this problem, the European Union (EU) first introduced its Database Directive 96/9/EC in 1996, mandating member nations to implement it by 1998. The Directive defined a database as “a collection of independent works, data or other materials individually accessible in a systematic or methodical way by electronic or other means.” The directive provides copyright protection to databases when they are ‘original’ in terms of the selection and/or arrangement of the contents. However, the term “original” is not clearly defined in the directive; great discretion is left to the courts. In addition, it provides Sui Generis protection to the database where the method of selection and arrangement does not exhibit sufficient ‘originality’ for copyright protection. Unauthorized extraction and reutilization of the data is an infringement of this right. Users of the database are restricted not to “perform acts which conflict with normal exploitation of the database or unreasonably prejudice the legitimate interests of the maker of the database.”

Under this directive, databases from countries that do not offer similar protection are not protected by the Directive. This indicates that US database creators will not be covered by this directive in the EU. Consequently, the US has attempted to introduce its own bills since 1996, but none of these legislative proposals have managed

¹ E.g. *HomeStore.com v. Bargain network* (S.D.Cal, 2002), *Ticketmaster v. Tickets.com* (C.D.Cal., 2000) *First Union v. Secure Commerce Services, In.* (W.D.N.C.1999) etc.

to pass.² Apart from the first bill HR3531 which was very similar to the EU Directive and was intended to create a kind of property right in the database, all the rest of the bills attempted to use the tort doctrine of misappropriation, which takes into account the commercial value of databases. The trend of the bills being proposed was to substantially limit the occasions in which the database creators' rights would be protected, since numerous exceptions and exemptions are provided. In spite of all these efforts, the bills still receive strong opposition from science groups, libraries, the industries in telecom ISPs, and database publishers (Linn, 2000). The major challenge for these legal initiatives is to strike a balance between the interests of database creators and data re-users.

There is a concern among many commentators that the positive impact of the final database legislation may be restricted for various reasons, including but not limited to the following:

- First, a law that strictly protects the database right may facilitate data monopoly where the factual source can only be generated from one place, such as eBay's bidding data (Zhu, 2005).
- Second, the content of most databases are facts in the public domain. Consequently, disallowing mere extraction for value creating activities runs afoul of the very purpose of the intellectual property clause to "promote the progress of science and useful arts" ³ (Heald, 2001).
- Third, some database creators, such as small online vendors, are often happy with data re-users since they often gain incredible reach for potential customers through the comparison.
- Fourth, consumers also benefit from using the value added databases, by getting better and cheaper products more easily.
- Fifth, the EU database directive involved relatively little public participation and has been regarded as a very strict body of legislation, which is not favoured by the US public.
- Sixth, a problem with the factual data is that once it is extracted, it is very difficult to determine the source, unless obvious evidence is available.

These facts should not be overlooked, when any appropriate regulations are drafted.

7. Conclusion

In this paper we explored the legal challenges facing the emerging ecommerce market, comparison-shopping services. We analyzed the historical development of this new business model and its co-evolution with the technology and legal constraints. We demonstrated how new technologies brought unprecedented challenges to existing laws and policies. Sometimes such challenges could greatly influence the way the techno-business infrastructure develops for ecommerce. We illustrated how several legal rulings influenced the development track of two types of comparison-shopping technologies, the Shopbots and Metabots.

Both the European Union and the United States have addressed the issue by instituting new laws such as the E.U. Database Directives and various legal initiatives. The existing legal remedies in the US are insufficient to provide a sound solution to the conflicts between Shopbots and Metabots. Striking an appropriate balance in this area is critical: creation through data reuse should be allowed to the extent that the database creator still has enough incentives to create the database. The discussion in the US toward a more balanced approach may still take time to reach consensus.

Hopefully, the experience in the EU and the heated debate in the US will help the stakeholders reach an appropriate level of database protection that can harmonize international differences.

² Those Bills include the "Database Investment and Intellectual Property Antipiracy Bill of 1996" (H.R. 3531); in 1997 "Collections of Information Antipiracy Act" was introduced in the House (H.R. 2652); in 1999 "Collections of Information Antipiracy Act of 1999" (H.R. 354), and "Consumer and Investor Access to Information Bill of 1999" (H.R. 1858), in 2003 Database and Collections of Information Misappropriation Act" (H.R. 3261)

² US Constitution 1.8.8

³ US Constitution 1.8.8

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